



Modifying an Intra-gastric Balloon for the Treatment of Obesity: a Unique Approach

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Abstract

Introduction The use of intra-gastric balloons (IGB) for the treatment of obesity has been increasing significantly, with data confirming its effectiveness with low complication rates. Adjustable balloons are not widely available for use in all countries, including the USA. In this video, we demonstrate a unique technique in which a conventional nonadjustable balloon is modified to an adjustable balloon to improve weight loss.

Methods A 35-year-old woman with a BMI of 36.1 kg/m² (84.4 kg) who had failed prior medical therapy for obesity presented for IGB placement. After discussion with the patient, including risks and benefits, a conventional IGB modified to a novel adjustable IGB was placed.

Results In this primary experience, we describe the use of a conventional IGB modified to an adjustable balloon. First, during balloon placement, an initial 500 ml of saline was instilled. At one-month follow-up, the patient only experienced 3.67%TBWL; thus, the balloon was adjusted with the addition of 160 ml of saline through the newly created modification catheter. At a 2-month follow-up, a second adjustment was performed with the addition of 180 ml, for a total of 840 ml. At 4 months, patient experienced 10% TBWL and decreased in BMI by 3.6 kg/m². No adverse events were reported.

Conclusion The transformation of a nonadjustable balloon into an adjustable balloon is feasible and effective in weight loss. This technique may be an alternative in cases where adjustable balloon is not available. Further studies are warranted to confirm the safety and efficacy of this novel device.

Keywords Obesity · Weight loss · Intra-gastric balloon · Endoscopy · Adjustable balloon · Experimental

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Introduction

The use of intragastric balloons (IGB) for the treatment of obesity has been increasing, with data confirming its effectiveness with low complication rates [1]. Numerous models of IGB are available; however, only one has a property of being adjustable. Adjustable balloons may be effective in avoiding early removal as well as increasing rates of weight loss, however, are associated with higher adverse event rates [2]. Adjustable balloons are not widely available for use in all countries, including the USA. In this [video](#), we demonstrate a unique technique in which a conventional nonadjustable balloon is modified to an adjustable balloon to improve weight loss.

Material and Methods

A 35-year-old woman with a BMI of 36.1 kg/m² who had failed prior medical therapy for obesity presented for IGB placement. A conventional IGB modified to an adjustable IGB was placed after IRB approval. This technique is performed in six steps: (1) Prior to IGB placement, the conventional balloon's catheter is detached from the valve; (2) using a metal mandrel, a new implantable catheter is connected to the conventional balloon; (3) the metal mandrel is then removed and a modified intravenous tube extension is connected to the newly implanted catheter; (4) the now modified adjustable balloon is then placed endoscopically and filled with fluid; (5) the intravenous extension tube is detached from the catheter and a knot is performed to avoid leakage; (6) the adjustable balloon is then ready for future adjustments.

Results

In this primary experience, during balloon placement, an initial 500 ml of fluid was instilled. At a 1-month follow-up, the patient only experienced 3.67%TBWL; thus, the balloon was

adjusted with the addition of 160 ml of saline. At a 2-month follow-up, the patient had experienced 6.99% TBWL for which a second adjustment was performed. At 4 months, following two IGB adjustments, patient experienced 10% TBWL. No adverse events, including balloon leakage, migration, or ulcers were reported during follow-up. The patient will present at 6 months for planned IGB removal.

Conclusion

The transformation of a nonadjustable balloon into an adjustable balloon is feasible and effective in weight loss. This technique may be an alternative in cases where adjustable balloon is not available. Further studies are warranted to confirm the safety and efficacy of this novel device.

Compliance with Ethical Standards

Conflict of Interest Leonardo Salles de Almeida has a patent for the adjustable implant kit.

Thiago Ferreira de Souza is a consultant for Apollo Endosurgery.

All other authors have no conflict of interest.

Ethical Approval Institutional Review Board of the Hospital approved the study. Informed consent was obtained from the participant included in the study.

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References

1. Moura D, Oliveira J, De Moura EG, et al. Effectiveness of intragastric balloon for obesity: a systematic review and meta-analysis based on randomized control trials. *Surg Obes Relat Dis*. 2016;12(2):420–9.
2. Genco A, Dellepiane D, Baglio G, et al. Adjustable intragastric balloon vs non-adjustable intragastric balloon: case-control study on complications, tolerance, and efficacy. *Obes Surg*. 2013;23(7):953–8.